REMARKS

Further and favorable reconsideration is respectfully requested in view of the foregoing amendments and following remarks.

Summary of Telephone Interviews with Examiner

Applicants wish to kindly thank the Examiner for her helpful comments during the telephone interviews of January 14, 2009 and January 27, 2009.

During these discussions, the rejection under 35 U.S.C. § 112, second paragraph was discussed. Applicants presented arguments traversing the Examiner's position. Additionally, Applicants discussed amending claim 1 to incorporate the limitations of claim 3. The Examiner indicated that such an amendment would overcome the indefiniteness rejection, as such an amendment introduces structural elements into claim 1.

Although Applicants do not acquiesce to the Examiner's position, Applicants have amended the claims in this manner, in order to expedite allowance of the above-identified application.

Applicants appreciate the Examiner's consideration and helpful suggestions for overcoming these issues.

Consideration After Final Rejection

Although these amendments are presented after final rejection, the Examiner is respectfully requested to enter the amendments and consider the remarks, as they place the application in condition for allowance. Additionally, it is noted that the claim amendments merely incorporate dependent claim 3 into independent claim 1, and cancel claim 3. Accordingly, Applicants respectfully assert that no further search and/or consideration is required as a result of these amendments.

Claim Amendments

Claim 1 has been amended to incorporate the limitations of claim 3, as a result of which

claim 3 has been cancelled, without prejudice.

No new matter has been added to the application by these amendments.

Rejection Under 35 U.S.C. § 112, Second Paragraph

The rejection of claim 1 as being indefinite under 35 U.S.C. § 112, second paragraph has been rendered moot by the above-discussed claim amendments.

Specifically, the Examiner indicates that claim 1 is indefinite for claiming properties such as knot strength and the twist index instead of chemical or structural features or methods to obtain the chemical or structural features. However, amended claim 1 incorporates the limitations of previous claim 3, and thus includes structural features, as acknowledged by the Examiner during the telephone interview. Additionally, claim 3 is not included in this rejection. Thus, the incorporation of claim 3 into claim 1 renders the rejection moot.

Accordingly, the Examiner is respectfully requested to withdraw this rejection.

Patentability Arguments

The patentability of the present invention over the disclosures of the references relied upon by the Examiner in rejecting the claims will be apparent upon consideration of the following remarks.

Discussion of Applicants' Invention

As discussed in the previous response, Applicants' invention is directed to a vinylidene fluoride resin monofilament suitable for fishing lines (and a process for production thereof). As disclosed at page 1, lines 14-25 of Applicants' specification, a monofilament of vinylidene fluoride resin has many advantageous features for use as fishing lines, such as tenacity, impact resistance, tensile force-transmitting property, weatherability, high specific gravity, a refractive index close to that of water, no hygroscopicity, and a high knot strength. However, vinylidene fluoride resin, particularly one having a high molecular weight for providing high mechanical strengths, has a high crystallinity and a high elastic modulus resulting in a rigid monofilament. This leads to the liability of twisting after unwinding from a spool followed by stretching and/ or

continuation of fishing.

Applicants' invention has succeeded in providing a vinylidene fluoride resin monofilament having a high molecular weight (as represented by a high inherent viscosity (η inh)) and a high knot strength, which also shows an excellent resistance to "twisting" (represented by a high twist index of at least 0.90). Although not limiting on the scope of the composition claims, Applicants achieved the above-discussed invention by a process such as that recited in claim 6. Such a process is especially characterized by a high-temperature relaxation treatment for an extremely short period of 0.05-0.5 sec. within a high-temperature heating oil bath at a temperature of 140-175°C, after melt-spinning and stretching.

Further, claim 1 now includes the limitations of previous claim 3, and thus recites a monofilament having a core-sheath laminar structure, which allows a high effective inherent viscosity, thus giving a high mechanical strength, but with a high twist index compared to a conventional monofilament. (Please see page 8, lines 3-12 of Applicants' specification.)

Rejections Under 35 U.S.C. § 102/103

Endo et al.

The rejection of claims 1, 2, 4, 5 and 10 under 35 U.S.C. § 102(a), 102(b) and 102(e) as being anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over Endo et al. (U.S. Patent No. 4,302,556) is respectfully traversed.

The Position of the Examiner

The Examiner takes the position that Endo et al. is directed to an improved polyvinylidene fluoride filament useful in the production of fishing lines. The Examiner admits that Endo et al. fail to teach a twist index of at least 0.90, a twist index of at least 0.92, a knot elongation of 16-25% and a Young's modulus of 1500 – 3500 MPa. The Examiner asserts that it is reasonable to presume that the discussed properties are inherent to Endo et al., based on the use of like materials.

Applicants' Arguments

Applicants respectfully disagree with the Examiner's position for the following reasons.

Initially, claim 1 has been amended to incorporate the limitations of claim 3. Thus, claim 1 now requires that the monofilament has a core-sheath laminar structure comprising a core having higher inherent viscosity and a sheath having a lower inherent viscosity. Claim 3 is not included in the above-rejection, and thus, the incorporation of claim 3 into independent claim 1 overcomes the above-rejection.

Endo et al. is directed to a single layer monofilament. In this regard, Applicants direct the Examiner's attention to page 9, lines 11 and 12 of the Office Action, where the Examiner states, regarding Example 2, ". . . Endo et al. is a sheath-less monofilament". (Emphasis added.) Thus, as admitted by the Examiner, Endo et al. fail to teach or suggest Applicants' claimed invention.

For the reasons discussed above, the invention of claims 1, 2, 4, 5 and 10 is clearly patentable over Endo et al.

Sato et al.

The rejection of claims 1-5 and 10 under 35 U.S.C. § 102(a), 102(b) and 102(e) as being anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over Sato et al. (U.S. Patent Publication No. 2003/0004292) is respectfully traversed.

The Position of the Examiner

The Examiner takes the position that Sato et al. is directed to a vinylidene fluoride resin monofilament for use as a fishing line. The Examiner admits that Sato et al. fail to teach a twist index of at least 0.90, a twist index of at least 0.92, and a Young's modulus of 1500 – 3500 MPa. The Examiner asserts that it is reasonable to presume that the discussed properties are inherent to Sato et al., based on the use of like materials.

Applicants' Arguments

Sato et al. is understood by the Examiner to disclose a vinylidene fluoride resin monofilament showing mechanical strengths which are generally comparable to Applicants' invention. However, Applicants assert that it is clear that Sato et al. fails to provide a vinylidene fluoride resin monofilament showing a high twist index of at least 0.90, based on the following discussion.

In item 12, on page 10 of the Office Action, Comparative Example 6 of Sato et al. is discussed as allegedly disclosing a core-sheath monofilament which is comparable to Applicants' monofilament. Comparative Example 6 of Sato et al. discloses a process including steps of subjecting a vinylidene fluoride resin monofilament having a core resin of η inh = 1.55 dl/g and a sheath resin of η inh = 1.3 dl/g to first stretching at a ratio of 5.82 at 169°C, second stretching giving a total ratio of 6.17 at 170°C, and relaxation of 5% at 250°C (dry) with no subsequent relaxation, to obtain a monofilament showing a knot strength of 66.3 kg/mm^2 (= 650 MPa).

However, the core-sheath monofilament obtained by Comparative Example 6 of Sato et al. shows poor winding properties, as indicated by a winding propensity of 0.78, and improvability of winding propensity of 0.91. This is compared to Examples 2-4, which are obtained by subjecting the core-sheath monofilament of the above Comparative Example 6 to relaxation of 6-8% in air at 270-290°C, and which show a winding propensity of 0.88-0.89 and improvability of winding propensity of 1.

The process of Examples 2-4 of Sato et al. is comparable to the process of Comparative Example 2 of Applicants' specification, including steps of subjecting a vinylidene fluoride resin monofilament having a core resin of η inh = 1.5 dl/g (and a sheath resin of η inh = 1.3 dl/g) to first stretching at a ratio of 5.8 at 167°C, second stretching at a ratio of 1.06 (giving a total ratio of 6.17) at 172°C, and subsequent relaxation of 6% in water at 80°C to obtain a monofilament showing a knot strength of 667 MPa, but also showing a lower twist index of 0.87 at 3 hours after release of load. The core-sheath monofilament of Comparative Example 6 of Sato et al., as relied upon by the Examiner, which lacks the subsequent relaxation, is not believed to exhibit a higher twist index (i.e., at least 0.90), as required by Applicants' claims.

For the reasons discussed above, the invention of claims 1, 2, 4, 5 and 10 is clearly patentable over Sato et al. [Claim 3 has been cancelled.]

Rejections Under 35 U.S.C. § 103

The rejections of claim 11 under 35 U.S.C. § 103(a) as being unpatentable over Endo et al. or Sato et al. in view of Boese (U.S. Patent No. 3,903,635) is respectfully traversed.

The Position of the Examiner

The Examiner states that Endo et al. and Sato et al. each teach that the filament can be used as a fishing line but does not specifically indicate that the fishing line is in a form of being wound around a spool. The Examiner relies on Boese as teaching a typical fishing rod assembly.

Applicants' Arguments

Since claim 11 is indirectly dependent upon claim 1, the comments set forth above concerning claim 1 are equally applicable to this rejection. Specifically, claim 11 is patentable over Endo et al. and Sato et al. for the same reasons claim 1 is patentable over these references.

Additionally, the Examiner has relied upon Boese merely to teach a typical fishing rod assembly. Therefore, Boese fails to remedy the deficiencies of the primary references.

Accordingly, it is respectfully requested that these rejections be withdrawn.

Conclusion

Therefore, in view of the foregoing amendments and remarks, it is submitted that each of the grounds of rejection set forth by the Examiner has been overcome, and that the application is in condition for allowance. Such allowance is solicited.

If, after reviewing this Amendment, the Examiner feels there are any issues remaining which must be resolved before the application can be passed to issue, the Examiner is respectfully requested to contact the undersigned by telephone in order to resolve such issues.

Respectfully submitted,

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